Poisonous antiseptics should not be trusted to irresponsible children. The chapters on foreign bodies in the eye, on bandaging, and on poisons and their treatment, contain methods of treatment which would be unsafe in the hands of children.

3. One would expect a discussion of the "typhoid fly" in book three, "Town and City." Investigations of the last few years indicate that the fly is a most important factor in community hygiene.

The investigations of Meylan on smoking which have appeared since this book was written seem to throw considerable doubt upon the method and conclusions of Dr. Seaver's work, which is so liberally quoted in this book. Many of our discussions of the injurious effects of tobacco and alcohol need the careful and painstaking supervision of a trained investigator. It is easy to make serious mistakes in drawing conclusions from experiments and observations which are not properly checked with controls, or in comparing effects when the causes are complex and diverse, and therefore not productive of effects that will permit legitimate comparisons.

4. Book four, "The Body at Work," emphasizes good posture. There can be no doubt concerning the evils that accompany marked spinal curvature or a marked flattening of the chest with a great rounding of the shoulders. But so far as I know, we have arrived at our conclusions relative to cause and effect in these conditions philosophically and not scientifically. In addition I must admit, no matter how it offends my esthetic taste, that I have seen very few perfectly straight backs and shoulders. Most men have a stoop, and nearly all of us show a spinal deviation.

It would appear on pages 29 and 30 that the cuts there given represent either smooth muscle fibers, or nucleated forms of lower animals. They are not the human striated variety which is there under discussion.

Page 31. The soleus and gastrocnemius muscles seem to have exchanged names—a very slight error and of no consequence.

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Agricultural Bacteriology. By Professor H. W. CONN, Wesleyan University.

The second edition of Conn's "Agricultural Bacteriology" has been materially reduced in volume and has been brought more within the compass of a text suitable to the needs of students in agricultural colleges. It rightly emphasizes the great importance of microbes to fermentative activities, as this type of organisms is of much moment in agricultural processes, both favorable and unfavorable.

While covering the ground on the whole in a thorough manner, the volume is marred, however, by a certain looseness of statement in some of its chapters that is a serious defect in a classroom text, and the book contains altogether too many typographical and textual errors for a second edition.

To cite a few: "Fermentation and decay (p. 26) are defined as progressive chemical changes taking place under the influence of organic substances (evidently organized substances is intended), which are present in small quantity in the fermenting mass."

Decay and putrefaction are characterized as decomposition of proteid matter, the distinction being that decay occurs in the presence of oxygen, while putrefaction takes place in its absence. It is, of course, well recognized that decay of carbonaceous matter occurs, and that meat and other proteids may also putrefy in contact with the air.

The nitrates in the soil are stated (p. 47) as ranging from 0.1–0.2 per cent. This figure accords more nearly with the total nitrogen content of the soil. "Nitrites are changed to nitrates by the addition of another atom of nitrogen" (p. 57), meaning, of course, oxygen.

Speaking of the *Azotobacter* type (p. 94) they are regarded as more vigorous than the aerobic type (*Clostridium*), meaning *an*aerobic. The bacteroids of legumes are repeatedly referred to (p. 99) as bacterioids. The bacteria concerned in manure production are all regarded as putrefying organisms (p. 109), while, of course, it is well recognized that

many of the organisms present in manure are not associated with the production of malodorous compounds.

Reference is made (p. 145) to *Bacterium acidi lactici* in some cases and then again to *Bacterium lactis acidi,* when evidently the same organism is meant. This is apt to confuse not only the beginner, but even the more advanced student.

Numerous typographical errors as misspelled words, "dropped" lines, etc., occur, but these are not so serious in a way, as they can readily be recognized, but textual errors as noted above are less easily perceived by the student.

Science should teach a student to be exact and definite, but when texts are placed before him that contain so many slips of the pen, it sets a standard that makes for inferior work.

H. L. Russell

SPECIAL ARTICLES

NOTE ON THE CHROMOSOMES OF NEZARA. A CORRECTION AND ADDITION

In my preceding accounts of the chromosomes in *Nezara hilaris* (1905–06) I described the idiochromosomes as being of equal size and failed to recognize a dimorphism of the spermatid-nuclei. I have recently discovered that this was an error; and it is one that I wish to correct in advance of a more detailed description because *Nezara* now stands as the original representative of that type of insects in which neither a dimorphism of the spermatozoa nor a quantitative difference of chromatin between the sexes can be seen.

That type was first based on the single case of *Nezara hilaris,* but I afterwards added to it the lygæid species *Oncopeltus fasciatus* on the strength of Montgomery's earlier observations on the male and my own unpublished ones on both sexes. I was led to reexamine *Nezara hilaris* because of the discovery that in the closely allied southern species *N. viridula* there is a typical and very unequal pair of idiochromosomes, which show the usual relation to sex. The reexamination, in comparison with *N. viridula,* proves that in my earlier account the idiochromosome pair was incorrectly identified, and that in *N. hilaris* there is in fact a slightly unequal pair of idiochromosomes. This is, however, not the smallest pair (which is common to the two species) as both Montgomery and I were led to believe from the size-relations seen in other forms, but one of the largest; and in the second division it does not lie in the outer ring, as the small one does (a very exceptional position for the idiochromosome pair, as I pointed out) but occupies the typical position at the center of the group. The inequality of this pair in *N. hilaris* may readily be overlooked, since it is but slightly marked—far less than in *N. viridula,* and perhaps even a little less than in *Mineus,* as heretofore described. Moreover, both idiochromosomes are more elongated than the other chromosomes and often of nearly the same diameter, but differ in length. In polar views, therefore, the inequality often can not be made out, though in side views it constantly appears. My former figure of such a view actually shows an inequality of this pair, but insufficiently, the smaller member being represented a little too long and thick. The inequality is often more marked than in the particular specimen there figured.

Nezara can, therefore, no longer stand as a representative of the "third type" recognized in my paper of 1906, and *Oncopeltus* must probably take its place. I say "probably" because the case of *Nezara* shows how readily a dimorphism of the spermatozoa may escape detection when only a slight size-difference between the idiochromosomes exists. Renewed studies upon *Oncopeltus* (a very favorable object) shows that a slight inequality of the idiochromosomes may in fact often be seen at every stage of the spermatogenesis, from the pre-synaptic period onward. Quite as often, however, they appear equal, and the size-variation appears to lie within the range of variability in the other chromosome-pairs. A final decision in regard to this species is reserved for a future more detailed account.

A second point of interest, formerly overlooked, is the existence in the second division